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Abstract of the national paper of Cuba

1. Space research in Cuba started in the 1960s with the establishment of scientific and university centres for the study of basic space sciences and the development and application of space technologies. There is now a pool of highly trained and qualified technical experts and research scientists who have quickly mastered the skills required for using the costly equipment procured through bilateral cooperation with various countries.

2. Successful research studies have been conducted and presented in numerous international forums and published in prestigious scientific journals. One milestone in that research was the joint Cuba-Union of Soviet Socialist Republics space flight conducted in 1980, during which over 20 scientific experiments were performed on board, yielding results of great value for medicine and industry.

3. With the collapse of the Soviet Union and the disappearance of the socialist camp, and with the increasing severity of the blockade by the United States of America against Cuba, space research and development work has been subject to considerable limitations. The existing facilities have nevertheless been maintained in operation and research is going forward in this sphere.

4. The National Commission for the Exploration and Peaceful Uses of Outer Space, which is attached to the Ministry of Science, Technology and the Environment and in which specialists from various Cuban institutions participate, was established in 1983 pursuant to a decree of the Council of Ministers.

5. Cuba has signed four of the five United Nations treaties on outer space. It is party to the United Nations Framework Convention on Climate Change and is engaged in research that, because of its importance, has been incorporated as part of the national programme entitled "Global Change and Sustainable Development in Cuba".

6. The country is a member of the World Meteorological Organization (WMO) and cooperates in furnishing timely information in connection with hurricanes. In the field of space meteorology, research is proceeding in the areas of multispectral and multi-temporal image analysis, in relation to the structure of tropical cyclones, and atmospheric temperature and humidity, on the basis of satellite and other images.

7. With a view to predicting, warning of and mitigating the consequences of natural disasters, there have been set up regional and national civil defence authorities, which have succeeded in substantially reducing mortality rates in connection with natural disasters.

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8. Cuba has been able, through remote sensing applications, to expand its national expertise in such key development sectors as agriculture, mineral prospecting and water and forestry resources. Nevertheless, the main obstacle to extensive use of the data from Earth observation systems continues to be the high purchase price of such data and of the facilities necessary for such purposes. One advantage in Cuba, however, is the availability of personnel who have the requisite technical expertise and professional competence and are qualified to undertake project management and research in this sphere.

9. It has been possible, through space research, to carry out major studies in a number of different fields, including, most notably, oceanographic studies to determine the surface temperature of the sea and the concentration of marine chlorophyll in connection with studies of fish ecosystems and global change.

10. In the agricultural sector, a low-cost integrated aerial system has been developed for the study and monitoring of agricultural resources, and satellite technology has been applied in crop planning and rotation.

11. Successful integrated geoenvironmental studies of various regions of the country have been conducted with a view to improving land use planning. In that regard, national software has been developed for processing satellite data.

12. Cuba has been involved in the development of laser telemetry since 1977 and, since 1992, under a bilateral agreement with Germany, the resultant data have been used in measurements of reference global terrestrial systems and the determination and monitoring of satellite orbits. Since 1995, Cuba has also been operating a global positioning system (GPS) station in accordance with the International GPS Service (IGS) standards.

13. Cuba is assisting efforts to strengthen cooperation in the sphere of communications and is accordingly a member of the International Telecommunication Union and WMO. Cuba is also a member State of the International Mobile Satellite Organization and is exploring the possibility of acceding to the International Telecommunications Satellite Organization Agreement.

14. In the area of basic space sciences, regular observations of the Sun, the ionosphere and the geomagnetic field are being maintained and the resultant data sent to world centres. Research is being conducted in the fields of astronomy and space geophysics.

15. Particular importance is assigned to cooperation within the framework of the United Nations and its Committee on the Peaceful Uses of Outer Space and other space agencies. The strengthening of regional cooperation for the development of space research is also a goal promoted by Cuba, as demonstrated by its participation in the three Space Conferences of the Americas, at which it presented proposals.

16. Cuba is also active in the promotion of cooperation in the area of space technologies and applications on the basis of the principles governing space exploration, with emphasis on the need for such cooperation to be directed towards achieving greater exchange among all, more effective utilization of space technologies by developing countries and the promotion of human development for the benefit of the world's peoples and protection of the environment.